

CLAIMS

Related Pending Application
Related Case Serial No: <u>09/701, 580</u>
Related Case Filing Date: <u>12-05-00</u>

1. Acoustic probe comprising elementary piezoelectric transducers (T_{ij}) and an electrical circuit comprising metal tracks (P_{ij}), so as to connect at least one metal track to at least one elementary transducer, each elementary transducer being formed from piezoelectric subelements (T_{ijk}) which are mechanically separated and connected to the same track, characterized in that it furthermore comprises a film of composite conducting material lying between the electrical circuit and the elementary transducers, the piezoelectric subelements (T_{ijk}) of the same elementary transducer (T_{ij}) being mechanically separated by gaps extending right into the said film.
2. Acoustic probe according to Claim 1, characterized in that it comprises an acoustic support called a "backing", the film of composite material having acoustic properties similar to those of the backing.
3. Acoustic probe according to either of Claims 1 and 2, characterized in that the film of composite material comprises conducting particles, the size of which is much less than the wavelength of the ultrasound wave generated by the probe.
4. Acoustic probe according to ~~one of~~ Claims 1 to 3, characterized in that the composite conducting film is a film made of an organic material of the epoxy resin or polyimide type, comprising conducting particles.
5. Acoustic probe according to Claim 4, characterized in that the conducting particles are particles of a metal such as silver, copper or nickel.
6. Acoustic probe according to one of Claims 1 to 5, characterized in that the film of composite material has a conducting filler content of between 50% and 30% by volume.
7. Acoustic probe according to one of Claims 1 to 6, characterized in that the thickness of the film of

composite material is in the region of several tens of microns.

8. Acoustic probe according to one of Claims 1 to 7, characterized in that the elementary transducers (Tij) are electrically separated by gaps extending right into the electrical circuit.

9. Process for fabricating an acoustic probe according to one of Claims 1 to 7, characterized in that it furthermore comprises the following steps:

- 10 - the assembly of at least one plate of piezoelectric material, one film of composite conducting material and one electrical circuit comprising metal tracks;
- 15 - the cutting of the plate of piezoelectric material and of the film of composite conducting material so as to define elementary piezoelectric transducers (Tij) which are electrically separated;
- 20 - the subcutting of the elementary transducers (Tij) and of part of the film of composite material so as to define piezoelectric subelements (Tijk) which are mechanically separated and electrically connected.

10. Process for fabricating an acoustic probe according to Claim 9, characterized in that the cutting and subcutting steps are carried out with a diamond saw.

11. Process for fabricating an acoustic probe according to either of Claims 9 or 10, characterized in that the cutting and subcutting steps are carried out simultaneously.

12. Fabrication process according to either of Claims 9 and 10, characterized in that the electrical circuit is placed on the surface of an acoustic support, the cutting in order to define the elementary piezoelectric transducers being carried out right into the said acoustic support.